

Vehicle Use Case Task Force
L1: Customer connects PEV at Home (premise)

Document History

Revision History

Revision Number	Revision Date	Revision/ Reviewed By	Summary of Changes	Changes marked

Approvals

This document requires the following approvals.

Name	Title

Vehicle Use Case Task Force

L1: Customer connects PEV at Home (premise)

1.1 Use Case Title

L1 – Vehicle Use Case

Customer connects PEV at Home (premise)

1.2 Use Case Summary

This use case details the Connection Location (VIN Authentication, Basic Charging per enrolled program) for the customer to transfer energy. This is precluded by specific enrollment process by one or more of the connection architectures as described in Use Cases S1-3. This sequence of Use cases is followed by Use cases PR1 series that summarize the previous Use Cases.

1.3 Use Case Detailed Narrative

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3. Step by Step Analysis of Each Scenario

Use Case L1: Custom Customer connects PEV at Home (premise) and expects energy charge billed to home account.

3.1 Scenario Description

Primary Scenario (L1): Customer connects PEV at their premise location using either EVSE cordset or Premise Mounted EVSE

This scenario describes the most common sequence of customer charging their PEV at their own premise. As described in the main Narrative section, the customer is attempting to charge a PEV under a selected PEV rate tariff that may provide an incentive to charge during off peak periods. The utility needs to support customers on the PEV program.

<i>Triggering Event</i>	<i>Primary Actor</i>	<i>Pre-Condition</i>	<i>Post-Condition</i>
<i>The customer plugs in the PEV using either EVSE cordset or Premise EVSE for charging</i>	<i>PEV</i>	<i>Customer has enrolled PEV with home utility. Enrollment and Initial Setup steps</i>	<i>The utility has a record of the energy purchased transactions related to the customer premise and the associated PEV ID.</i>

3.1.1 Steps for this scenario

<i>Step #</i>	<i>Actor</i>	<i>Description of the Step</i>	<i>Additional Notes</i>
1	Customer	Customer connects PEV at his premise location. Customer can plug in his PEV using either EVSE cordset or Premise EVSE for charging	
1a	Customer	Customer connects EVSE cordset to Energy Portal at Premise.	Startup steps are provided in S1
1b	EVSE	Customer connects Premise Mounted EVSE to PEV.	Startup steps are provided in S2

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<i>Step #</i>	<i>Actor</i>	<i>Description of the Step</i>	<i>Additional Notes</i>
2	PEV/Energy Services Communications Interface (ESCI)	PEV and Energy Services Communications Interface (ESCI) perform PEV binding and authentication process.	Implementation could have PEV or ESCI as initiator of session.
3	PEV	PEV is able to provide indicator to customer that binding has been successful (and that the PEV will receive incentive rate upon charging, if applicable).	
4	PEV	PEV sends Energy Request (amount and rate) and Schedule (according to enrolled PEV program)	
5	Utility	Utility compares request with available and confirms or adjusts for message back to PEV Utility sends Energy Available (amount and rate) and Schedule (according to enrolled PEV program)	
6	PEV	PEV prepares for charging	
7	PEV	PEV begins charging based on Customer-selected preferences. Charging may be delayed based upon Customer preferences or grid reliability criteria (e.g., off-peak economy charging, demand response event underway, short, randomized charging delay to promote grid stability, etc.)	The vehicle needs to record the energy delivered as a running total for the event. This would be a reference to be compared with the EUMD total. The EUMD has logged the actual energy flow accumulation for the utility
8	End Use Measurement Device	EUMD records charging information and energy supplied to PEV for each charging session. Charging information includes PEV ID, Premise ID, energy usage, and time stamp for each metering interval.	
9	End Use Measurement Device	EUMD communicates to Energy Services Communication Interface the energy supplied to PEV for each charging session.	This communication could be on a periodic basis during charging, upon vehicle unplug from energy portal, or a combination of the two.

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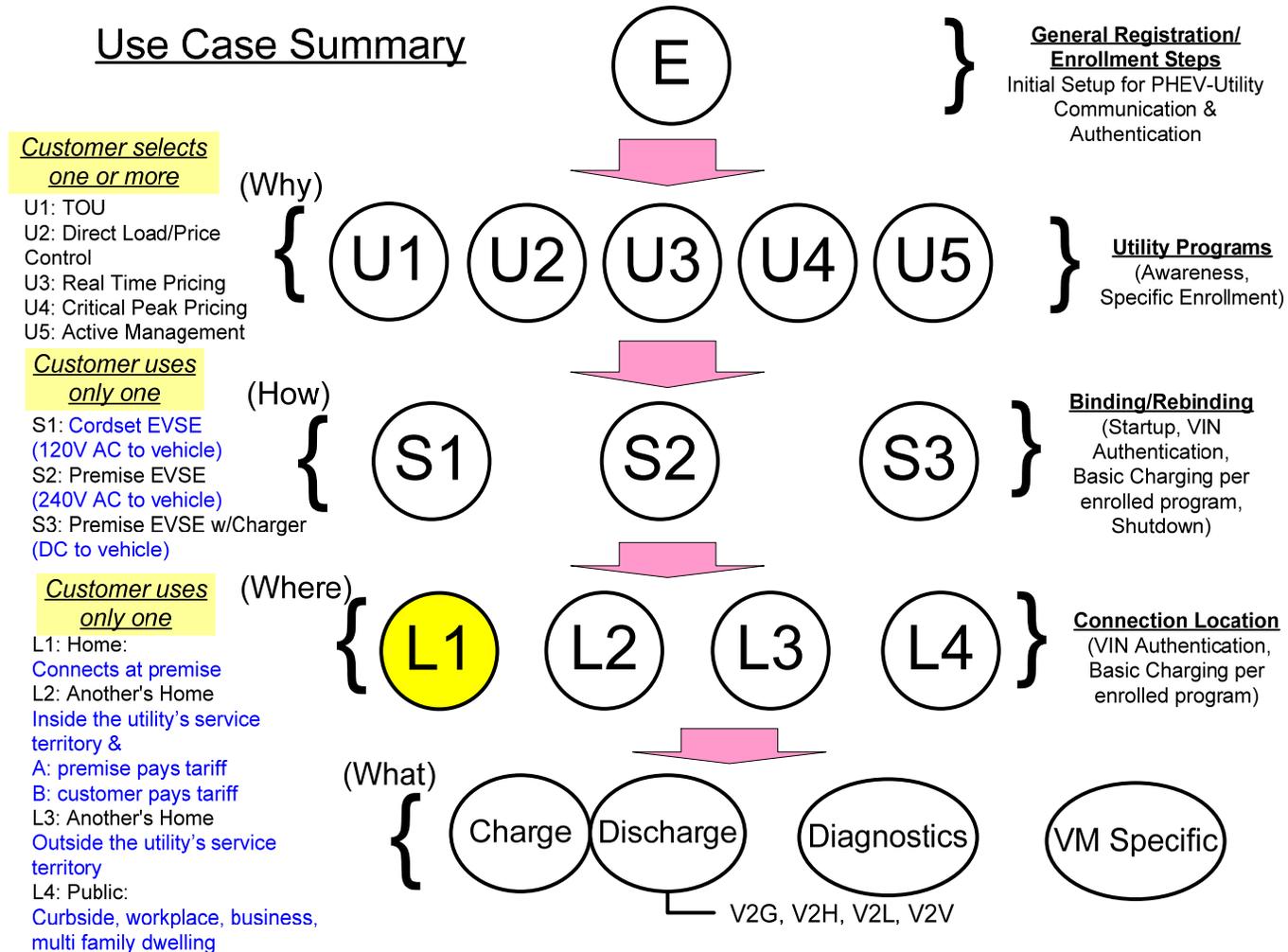
<i>Step #</i>	<i>Actor</i>	<i>Description of the Step</i>	<i>Additional Notes</i>
10	Energy Services Communication Interface	Energy Services Communication Interface communicates to Utility the energy supplied to PEV for each charging session. ESCI transmits Date, time, duration and energy delivered to Utility and Vehicle.	This is the status of the cycle for the Utility, PEV and Customer information. J2836 identifies the periodicity of these messages. It may be desired to have this summed on a regular interval (every minute) in case the charge cycle is interrupted prior to the end so the current information (running summation) is not lost
11	Utility	Utility records each PEV charging session for bill generation and reporting to customer account associated with this premise and PEV ID.	

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4. Requirements

This use case is the 4th in a series that follows Use Cases S1-3 for connection architectures. This use case defines the steps for the customer connecting at home.



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4.1 Functional Requirements

Func. Req. ID	Functional Requirement	Associated Scenario # (if applicable)	Associated Step # (if applicable)

4.2 Non-Functional Requirements

Non-func. Req. ID	Non-Functional Requirement	Associated Scenario # (if applicable)	Associated Step # (if applicable)

4.3 Business Requirements

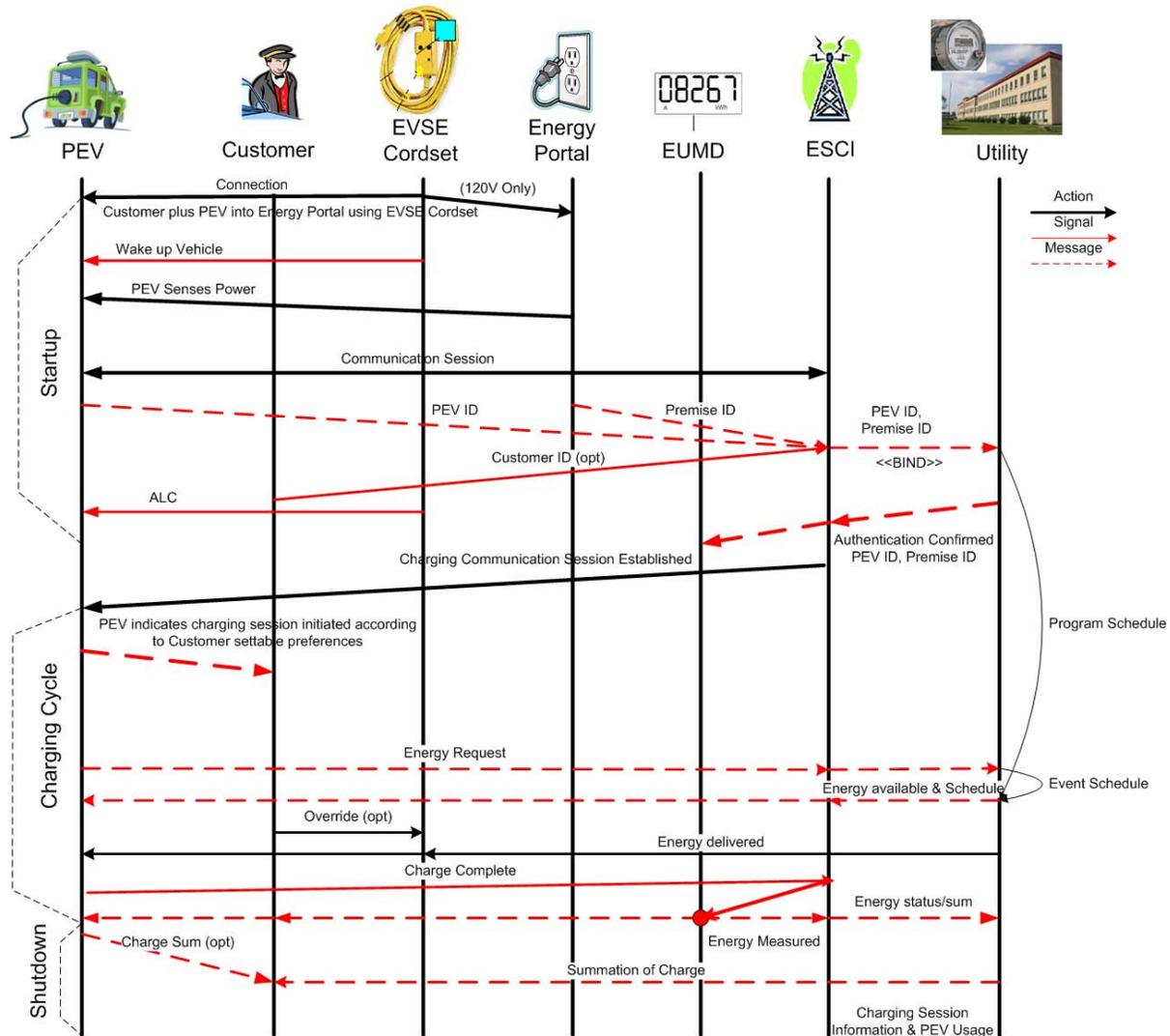
Bus. Req. ID	Business Requirement	Associated Scenario # (if applicable)	Associated Step # (if applicable)

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5. Use Case Models

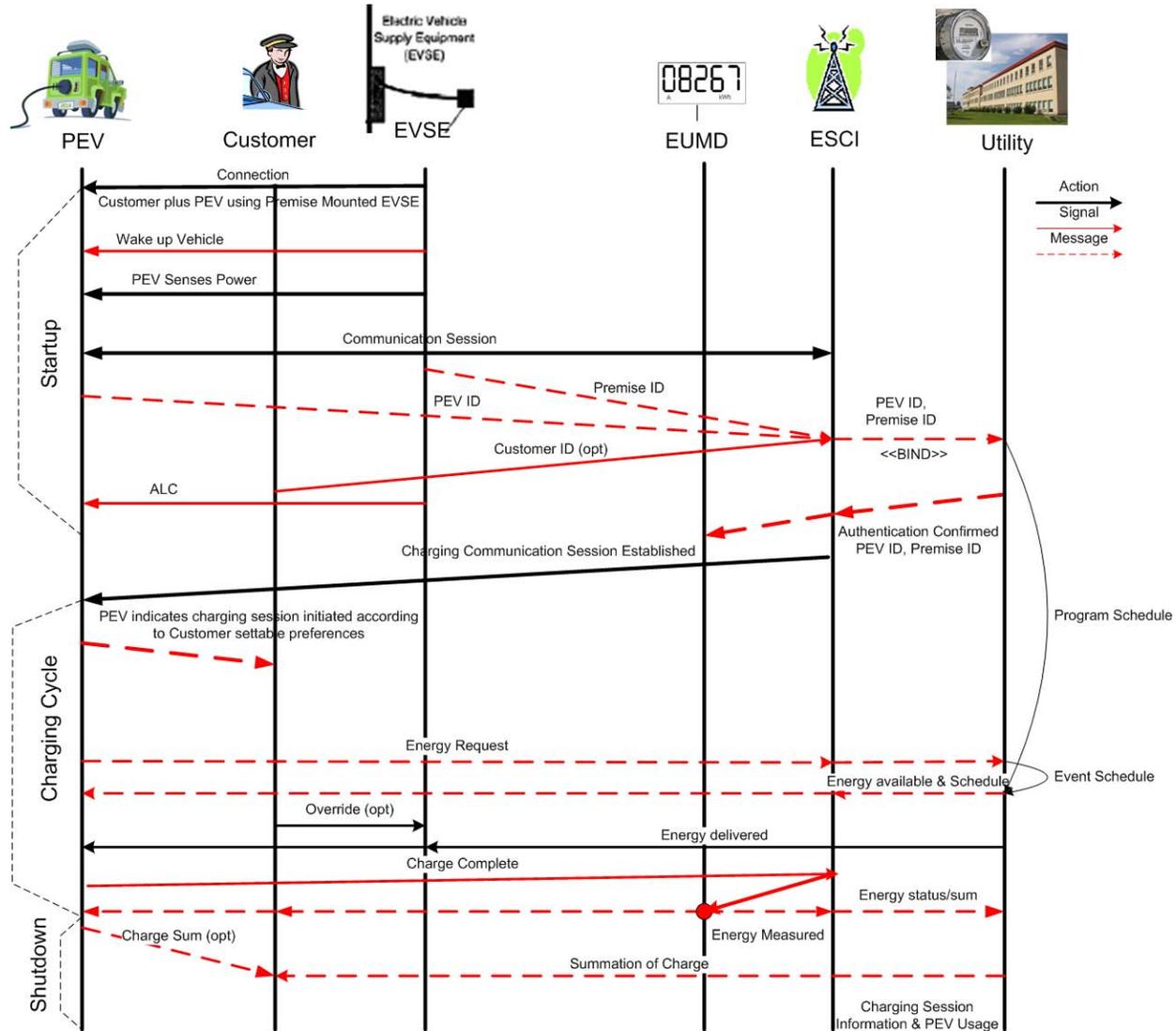
5.1 Sequence Diagram using EVSE Cordset



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5.2 Sequence diagram using premise EVSE



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5.3